

PROJECT TITLE: Narrow-leaf Lupine Variety Evaluation and Agronomic Studies

EXPERIMENT NO:

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OBJECTIVES: 1) evaluate narrow-leaf lupine varieties for potential adaptation to central Montana;
2) determine optimum seeding date and rate for this crop in central Montana.

METHODS: Two studies on narrow-leaf lupine (*L. angustifolius*) were conducted at the Central Agricultural Research Center of MSU, near Moccasin in 2002.

The first trial was variety evaluation study. Five narrow-leaf lupine varieties were direct-seeded into winter wheat stubble in a uniform field using a Conserva-Pak no-till drill. All five varieties were from Australia, they were numbered as Lupin-M1, Lupin-G1, Lupin-B1, Lupin-T1, and Lupin-T2. They were seeded at a rate of 80 lb/a and no fertilizer was applied.

The second trial was seeding date and rate trial. Three narrow-leaf varieties, Lupin-M1, Lupin-B1, and Lupin-K1 were direct seeded into winter wheat stubbles on three seeding dates (11 April, 1 May, and 29 May) using both hoe and disk type no-till plot drills. Each lupine variety was seeded in four seeding rates, 80, 100, 120, and 160 lb/a with three replications. The experiment was a split-split plot design and no fertilizer was applied. Roundup was applied before seeding, and Assure II was applied as needed for grassy weed control after lupine emergence.

Lupine seeds were inoculated with lupine inoculum. Seeds in both trials were harvested using a plot combine.

RESULTS:

Variety evaluation: Because Lupin-M1 leaves were green throughout the summer, it was not harvested. Average yield for the other four varieties were:

Lupin-G1	661.7 lb/A
Lupin-B1	719.2 lb/A
Lupin-T1	887.5 lb/A
Lupin-T2	869.3 lb/A

Seeding Date and Rate Trial: Same as the variety evaluation trial, Lupin-M1 kept green throughout the summer, we did not harvest this variety. Furthermore, there was herbicide damage caused by the residual herbicide from previous crop (it was suspected to be Tordon). The damage was especially severe in Replicate 1, therefore, only the replicate 2 and 3 were harvested. Data from two varieties and two replicates are presented as following.

Yields were generally lower than the variety evaluation trial. There was no significant different between the drill types and varieties (Fig. 1). Seeding date and rate significantly affected lupine seed yield (Fig.2). The second seeding date (1 May) had higher yield than the first (11 April) and the third (29 May) seeding dates. Yield increased significantly when seeding rate increased from 100 lb/A to 120 lb/A, but there was no difference when seeding rate increased from 80 and 100 and when seeding rate increased from 120 to 160 lb/a(Fig.2).

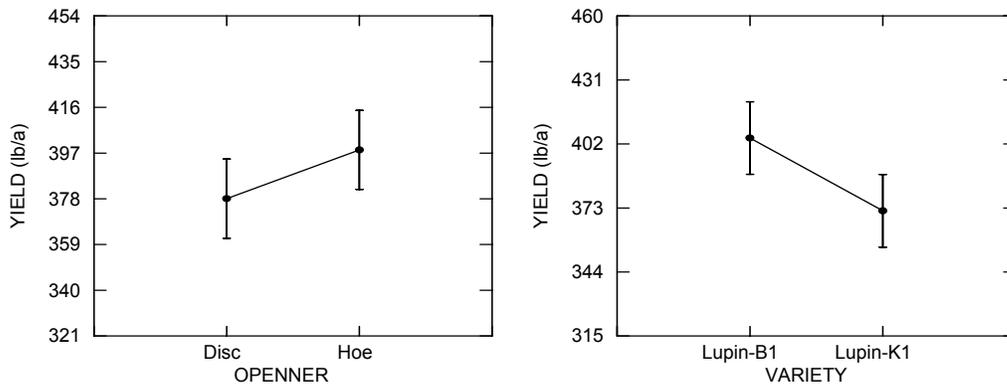


Fig. 1. Mean narrow-leaf lupine seed yield influenced by drill openers and varieties.

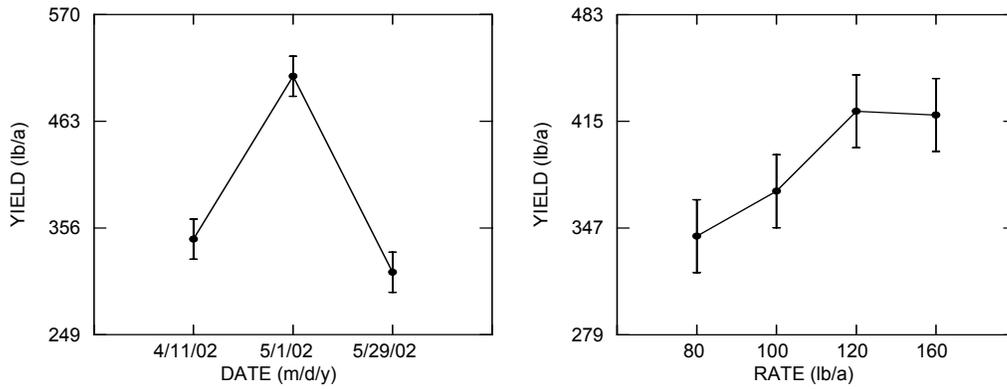


Fig.2. Mean narrow-leaf lupine seed yield at different seeding dates and seeding rates.

FUTURE PLANS: Narrow-leaf lupine is a new crop for central Montana. Due to the residual chemical effects in this year's trials, these experiments need to be repeated to confirm the results. Variety evaluation study needs also to be continued to select suitable varieties for the environments in central Montana.